

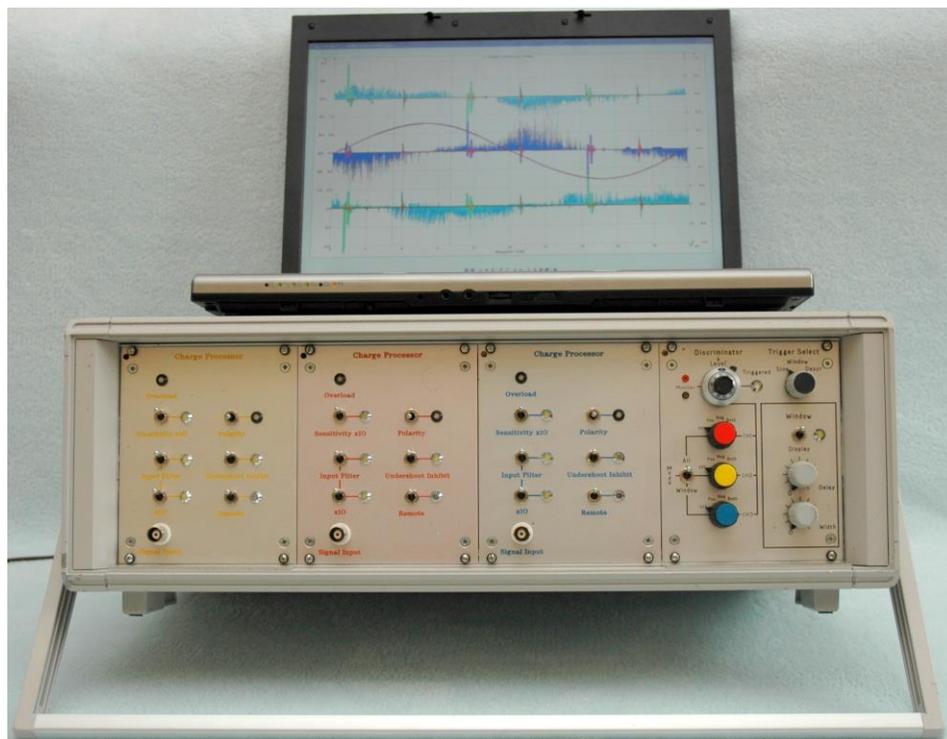
## Discharge Processor System for monitoring partial discharges in HV Plant Type 993/1 and 993/3

The monitoring of electrical plant for partial discharges whilst in operation or on the test bench is now widely used for condition monitoring and acceptance testing. The equipment for undertaking this can be expensive and in times of recession presents problems in funding the purchase. The charge processor system developed by M&B Systems and Exon Consultancy for both online and off line discharge monitoring of power plant was designed to be simple yet versatile to keep it affordable but still permit operators to optimise the usage for their particular circumstances. It comes in 2 forms

- The 3 phase version Type 993/3 is primarily used for online monitoring using the signals from Rogowski coils and other RFCT as well as capacitance coupler
- The single phase version Type 993/1 is primarily used for off line testing of samples to testing full machines and is a direct replacement for the ERA Discharge detector Model 5

Either version can perform the function of the other version as both use identical hardware so helping companies to perform both type of activities with minimal equipment costs. The system uses standard computers, interfaces and software so further helping to keep costs down.

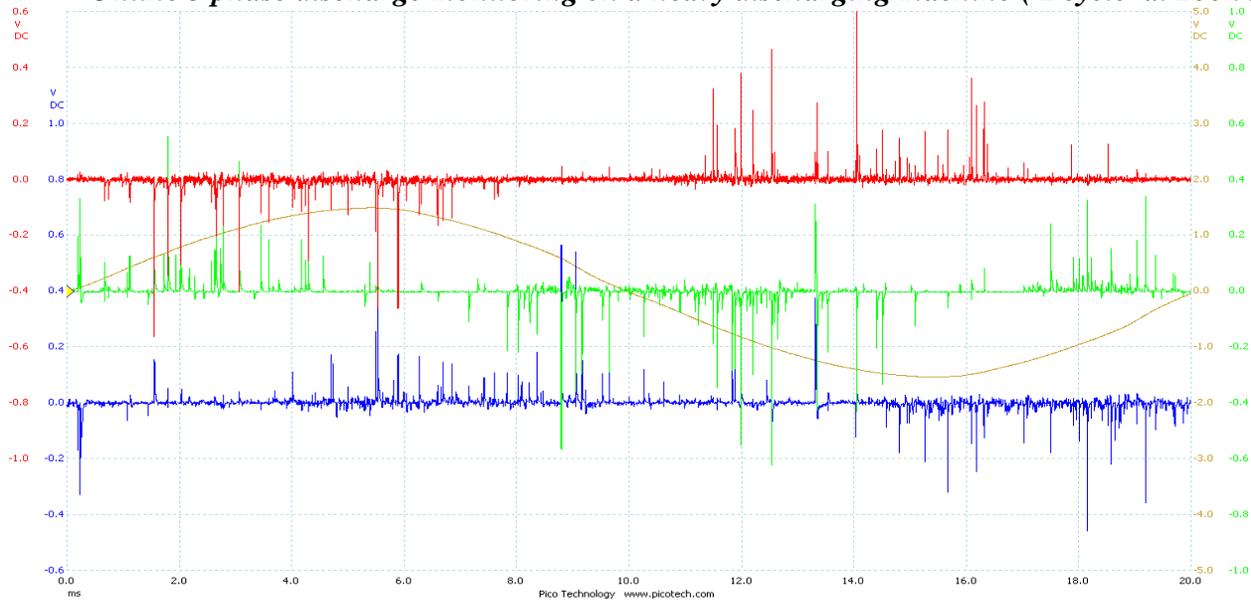
The basis of the system is that the rf signals from the transducers are amplified, filtered and integrated to deduce the size of the charge pulse. It covers the range of 10pC/V to 100,000pC/V and processing signals from <100kHz to >100MHz. These pulses are then captured by the ADC and displayed on the computer screen usually on a 20mS linear time base. Then using the magnitude, location in the mains cycle and polarity of the pulses, the discharge can be assessed as to its cause and severity. The raw data collected can be saved in memory for subsequent processing in the quiet of the office. It can be read and processed in spreadsheets such as EXCEL



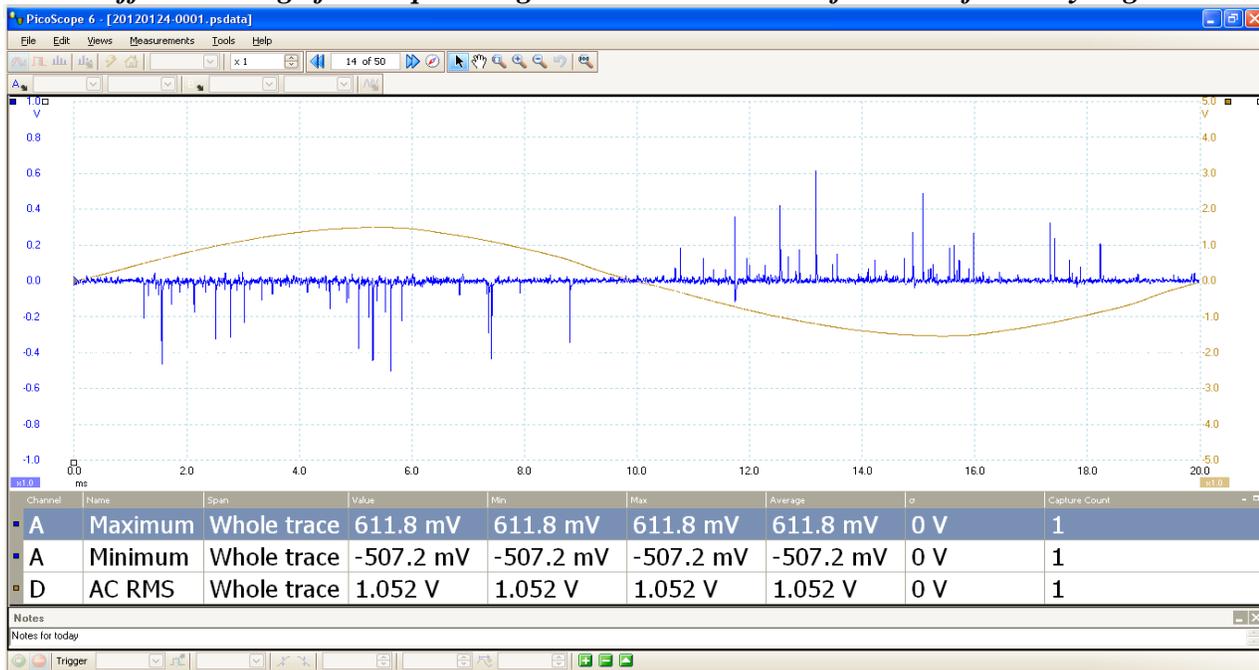
**Three Phase Charge Processor System Type 993/3 with the laptop display**

The engineer can set up a wide range of conditions for the collection of the discharge data using the tools available within the charge processor such as additional gain, additional low frequency noise filtering, pulse polarity selection, triggering only when discharges are only in defined part of the mains cycle and only when above defined levels,. Within the computer system, the presentation of this data can be personalised to the customers own requirements. Mathematical manipulation within the display software permits statistical analysis of the captured waveforms and the addition of reference waveforms. Stored data can be replayed through the displayed system at a later date or manipulated within spread sheets to undertake processes such as pulse height analysis, data compression, persistence displays. Below are two typical displays for online and off line testing

**Online 3 phase discharge monitoring on a heavy discharging machine ( 1 cycle at 100nC/V)**



**Off line testing of a sample using the internal statistical functions for analysing the data**



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